

BOW TIE METHODOLOGY

Used with the ARIS Governance, Risk & Compliance Management Platform



In risk-intensive businesses like the energy sector, a new risk analysis and description methodology has become more and more popular: bow tie diagrams. The success of this diagram lies in its clear structure and simplicity, which is easy for the non-specialist to understand but still has sufficient depth for an expert discussion.

User concept

The basic idea is to combine the cause (threats) with the consequence via the risk event. The diagram's main strength lies in scenarios in which clear, independent paths lead to the occurrence of a risk event or consequence. They focus on controls to be established and thus form the basis for actively managing the risk situation. Bow tie diagrams are also a recommended technique mentioned in DIN ISO 31000 on risk management.

Bow tie basics

The bow tie methodology can be seen as the combination of a fault-tree analysis on the causes combined with an event tree analyzing the consequences. However, the bow tie takes into account the barriers (controls) between cause, risk event and consequences. Bow tie analysis is easier to understand and communicate than more complex fault and event techniques.

For this reason, an increasing number of government regulators for Major Hazard Facilities (MHFs), offshore oil and gas, and aviation, for example, welcome safety case submissions that use diagrams to represent risks.

Process of creating bow tie diagrams

A bow tie diagram is created by defining the:

- Hazard (potential to cause harm)
- Event to be prevented
- Threats that could cause the event to occur and release the hazard
- Consequences of the event occurring
- Controls to prevent the event occurring (threat barriers)
- Controls to mitigate against the consequences (recovery controls)

The threats are identified and listed to the left of the risk event while the consequences are identified and displayed on the right. After the hazard has been defined, preventive controls are defined and identified that will stop or reduce the hazard from occurring and (detective) controls to prevent or lessen the outcome. The controls can also have "threats to the controls" called escalation factors, which weaken effectiveness.

Integration into the ARIS GRC Platform

The bow tie modeling enriches the ARIS GRC Platform by offering a way to:

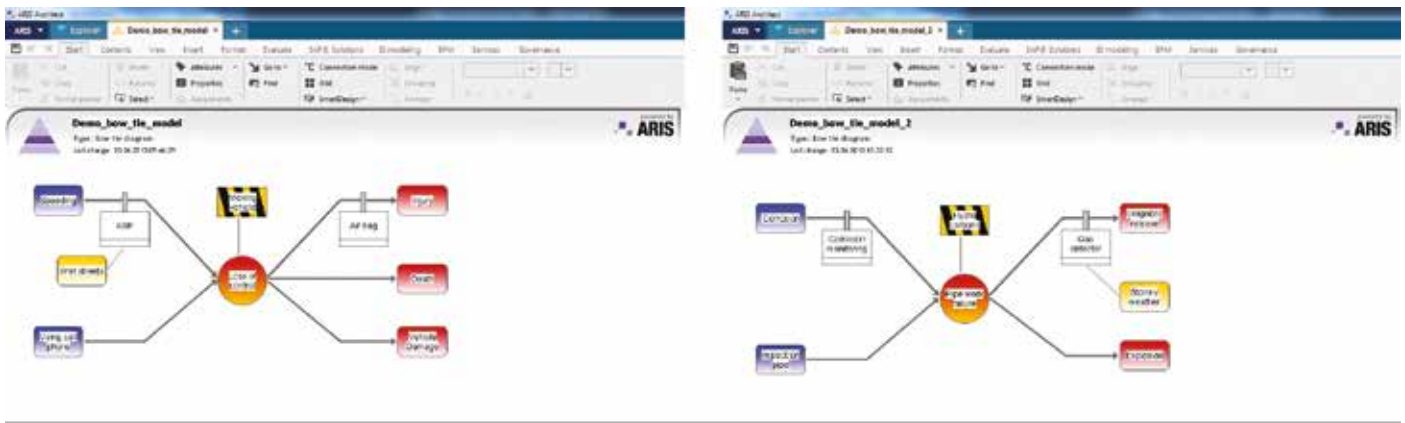
- Describe and analyze the risk in detail
- Describe different risk scenarios for a threat
- Communicate risk treatment to third parties
- Show the current risk situation by combining the structural information of the bow tie diagram with control and risk data from ARIS Risk & Compliance Manager in dashboards created with MashZone, for example

Related models

The business controls diagram for a control describes who is responsible and how this control is tested and verified. In the Event-driven Process Chain (EPC) or other process diagram, the control is displayed to show who is doing that task and where (in the process flow).

Bow tie modeling does not interfere with the standard modeling conventions used with ARIS.

Learn more at www.SoftwareAG.com/GRC.



Example bow tie diagrams

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